

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY
(CHAPTER I OR CHAPTER II
OF THE PATENT COOPERATION TREATY)
(PCT Rules 44bis.3(c) and 72.2)

To:

MATSUURA, Kenzo
Matsuura & Associates, P.O. Box 176, Shinjuku Sumitomo Bldg.
20F, 6-1, Nishi-shinjuku 2-chome, Shinjuku-ku Tokyo
1630220
JAPON

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03-3340-5181

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|---|---|
| Date of mailing (day/month/year) 03 August 2006 (03.08.2006) | |
| Applicant's or agent's file reference MD2004-006PC | IMPORTANT NOTIFICATION |
| International application No. PCT/JP2004/016537 | International filing date (day/month/year) 08 November 2004 (08.11.2004) |
| Applicant HITACHI MEDICAL CORPORATION et al | |

1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

| | |
|---|--|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer Yoshiko Kuwahara |
| Facsimile No. +41 22 338 82 70 | Facsimile No. +41 22 338 82 70 |

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

| | | |
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| Applicant's or agent's file reference MD2004-006PC | FOR FURTHER ACTION | See item 4 below |
| International application No. PCT/JP2004/016537 | International filing date (<i>day/month/year</i>) 08 November 2004 (08.11.2004) | Priority date (<i>day/month/year</i>) 12 November 2003 (12.11.2003) |
| International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237 | | |
| Applicant HITACHI MEDICAL CORPORATION | | |

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|-------------------------------------|---|---|-----------|---------------------|--------------------------|------------|----------|-------------------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1. | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a). | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | This REPORT consists of a total of 6 sheets, including this cover sheet. In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead. | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/> | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. II | Priority | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention | | | | | | | | | | | | | | | | | | | | | | | |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VI | Certain documents cited | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application | | | | | | | | | | | | | | | | | | | | | | | |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application | | | | | | | | | | | | | | | | | | | | | | | |
| 4. | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2). | | | | | | | | | | | | | | | | | | | | | | | | |

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| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Date of issuance of this report 27 July 2006 (27.07.2006)</td> </tr> <tr> <td style="padding: 5px;"> Authorized officer <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div> </td> </tr> </table> e-mail: pt07@wipo.int | Date of issuance of this report 27 July 2006 (27.07.2006) | Authorized officer <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div> |
| Date of issuance of this report 27 July 2006 (27.07.2006) | | | |
| Authorized officer <div style="text-align: center; font-weight: bold;">Yoshiko Kuwahara</div> | | | |

PATENT COOPERATION TREATY

TRANSLATION

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing
(day/month/year)

Applicant's or agent's file reference

MD2004-006PC

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/JP2004/016537

International filing date (day/month/year)

08.11.2004

Priority date (day/month/year)

12.11.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

HITACHI MEDICAL CORPORATION

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input checked="" type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/JP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/016537

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/JP2004/016537

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 5

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 5
are so unclear that no meaningful opinion could be formed (*specify*):

A time axis direction extraction process described in claim 5 comprises the step of successively comparing along a time sequence a pixel value at the first point in time contained within a predetermined interval and a pixel value at the second point in time contained within the predetermined interval for each pixel coordinate position with respect to each pixel contained in image data and conducting time axis direction extraction of pixels matching the predetermined condition, but because no specific embodiment of this process is described, the disclosure is incomplete in the meaning of PCT Rule 5, and the process lacks a support by the disclosure of the specification in the meaning of PCT Rule 6. Furthermore, even if the general technical knowledge at the time of filing is taken into account, the description lacks clarity in the meaning of PCT Rule 6.

☐ the claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 5

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☐ See Supplemental Box for further details.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2004/016537

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|---------------------------------|-----|
| Novelty (N) | Claims | 1-4, 6-27 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 4, 12, 13, 17, 21, 23-25, 27 | YES |
| | Claims | 1-3, 6-11, 14-16, 18-20, 22, 26 | NO |
| Industrial applicability (IA) | Claims | 1-4, 6-27 | YES |
| | Claims | | NO |

2. Citations and explanations:

Claims 1-3, 6-11, 14-16, 18-20, 22, 26

Document 1: JP 11-137552 A (GE-Yokogama Medical Systems, Ltd.), 25 May 1999
(Family: none)

Document 2: JP 2001-252263 A (Toshiba Corp.), 18 September 2001 (Family: none)

Document 1 describes an image processing method comprising an input step of inputting image data arranged in the time sequence and obtained by picking up an image of the inspection body within the predetermined interval with a medical image pick-up device, and a step of configuring a three-dimensional image based on the image data. Document 2 describes an image processing method comprising a time axis direction extraction step of conducting time axis direction extraction of pixels matching the predetermined conditions from among all the pixels arranged in the time sequence for each image coordinate position with respect to image data arranged in the time sequence obtained by picking up the images of the inspection body. Conducting the time axis direction extraction of the pixels matching the predetermined condition from among all the pixels in the time sequence, as described in document 2, in the image processing method described in document 1 could have easily been conceived by a person skilled in the art. Furthermore, document 2 also describes that the predetermined condition is the time axis direction extraction of pixels corresponding to a maximum pixel value or a minimum pixel value from among all the pixels arranged in the time sequence in each pixel coordinate position. Document 1 also describes finding a differential image representing the difference between an image at the point in time in which a contrast agent is present and an image at the point in time in which the contrast agent is not present. Finding the differential image between a first image obtained by the time axis extraction processing conducted with respect to the maximum pixel value, which is the image with the brightest level of the contrast agent, and a second image obtained by the time axis extraction process conducted with respect to the minimum pixel value, which is the image obtained when no contrast agent is present, could have easily been conceived by a person skilled in the art.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: BOX V

Claims 4, 25

Conducting time axis direction extraction of any pixel value or a pixel corresponding to a pixel value serving as a central value from among all the pixels arranged along the time sequence is not described in any of the documents cited in the ISR and this feature is not obvious to a person skilled in the art.

Claims 12, 13, 17

Calculating an average value of pixel values from the first point in time to the second point in time for each pixel coordinate position with respect to each pixel contained in a region in which the variation ratio of a pixel value of each pixel contained in the image data at the first point in time within the predetermined interval and a pixel value of each pixel contained in the pixel data at the second point in time within the predetermined interval is equal to or less than the predetermined value and producing a processed image in which the pixel values of each pixel contained in the region in which the variation ratio is equal to or less than a predetermined value is the average value, and the pixel value of each pixel in the region where the variation ratio is higher than the predetermined value is a pixel value of the image data is not described in any of the documents cited in the ISR and this feature is not obvious to a person skilled in the art.

Claim 21

Conducting the predetermined time axis direction weighting along the time sequence with respect to image data arranged along the time sequence is described in none of the documents cited in the ISR and this feature is not obvious to a person skilled in the art.

Claims 23, 24, 27

Calculating an arithmetic average value or weighted arithmetic average value of the pixel value of image data at the target point in time contained in the predetermined interval and a pixel value of image data before or after the target interval is described in none of the documents cited in the ISR and this feature is not obvious to a person skilled in the art.